

### Remarks

The Office Action dated June 9, 2011, presents the following claim rejections: claim 3 stands rejected under 35 U.S.C. § 112(2); claims 1, 3, 5-7 and 17-19 stand rejected under 35 U.S.C. § 103(a) over Chang (U.S. Patent No. 5,991,204) in view of Fan *et al.* (U.S. Patent Pub. No. 2004/0065917) and further in view of Quirk *et al.* (“Semiconductor Manufacturing Technology”, 2001, Prentice Hall, pp. 456 and 459-461); and claims 4 and 14 stand rejected under 35 U.S.C. § 103(a) over the ‘204, ‘917 and Quirk references further in view of Hong *et al.* (U.S. Patent No. 5,614,746). In the following discussion, Applicant traverses all of the rejections and, unless explicitly stated by the Applicant, does not acquiesce to any objection, rejection or averment made in the Office Action.

Applicant respectfully traverses the rejections under § 112(2) because a skilled artisan would understand the metes and bounds of the claims and the import of the limitations. Applicant submits that the limitations of claim 3 are not contrary to itself. Metal oxide is one of the metals of the oxide layer, which also includes one or more of silicon nitride and silicon carbide. The claim language does not limit the oxide layer to only metal oxide as the layer. Other materials may be present in the layer as well. Further, the dielectric material is qualified as having an oxygen diffusion through the material that is an order of magnitude smaller than the diffusion through the oxide spacers. This qualification does not limit the material itself, but limits the diffusive properties through the layer. In other words, the same material (*e.g.* a metal oxide) may be used for both the dielectric and the oxide spacers, but the materials may be formed or constructed differently such that the dielectric and oxide spacers have different diffusion properties. The diffusion properties of the materials used for the oxide spacers and the dielectric must be an order of magnitude different, but the same material may be used for both. Because one skilled in the art would understand that a single material may be constructed to have different diffusive properties, and the claim language is not limited in that only a single material is used to form the dielectric, the § 112(2) rejection is improper, and should be withdrawn.

Applicant respectfully traverses the § 103(a) rejections of claims 1, 3-8, 10-11, and 13-19 over the ‘204 reference in view of the ‘917 reference, and in further view of the “Quick” reference. Applicant traverses due to lack of correspondence, for instance,

the references do not appear to teach the following aspects of the claims: forming spacers against the control gate because the '204 reference only teaches a single spacer against a control gate; using the spacers to mitigate the diffusion of oxygen to the deposited interlayer dielectric layer because it does not appear that the references discuss mitigating the diffusion of oxygen; and the spacers being formed from a dielectric material having an oxygen diffusion through the dielectric material that is, relative to oxide spacers, an order of magnitude smaller than the oxygen diffusion through the spacers because the '917 reference discusses a material, but does not discuss its diffusion properties. As a result, the references do not appear to teach the claimed invention "as a whole."

For instance, the asserted spacer 106 does not correspond to the plurality of spacers required by the claim language. The spacer 106 is not used to mitigate oxygen diffusion, nor is the single spacer arranged to mitigate such oxygen diffusion. The asserted embodiment of the '204 reference leaves the interlayer dielectric 102 exposed to the air on the side of the control gate 101 that is not adjacent to the asserted access gate 107. The Office Action appears to confuse the requirements for assertions of correspondence to an apparatus claim to those of a method claim as the Examiner's assertions of correspondence to the step of using the spacers to mitigate oxygen diffusion which appear to be based on an assertion of correspondence to a spacer made of a particular material. The Office Action must show that each step of the method is performed, not that a device with similar characteristics to the end result of the method has been found. The step of "using" a particular portion of a device being made by the claimed method during the device's manufacture should be afforded the same weight as all other claim limitations. Any position to the contrary is not supported by the M.P.E.P. or relevant case law. *See, e.g.* M.P.E.P. § 2173.05(g).

Further, the asserted material of the '917 reference does not discuss having diffusion properties relative to oxide spacers. The '917 reference discusses dielectric spacers that facilitate enhanced silicon oxidation (para. 0051), but the material used is not discussed with any relation to the oxide spacers. The '917 reference does not appear to discuss the amount of oxygen diffusion associated with the material generally, and does not discuss the oxygen diffusion of the spacers with reference to any other material that would serve to compare the oxygen diffusion of the materials. The Examiner appears to

have found a material of a dielectric spacer that is utilized by the instant disclosure, but the '917 reference does not discuss the diffusive properties of the material. As discussed above with respect to the §112(2) rejection, materials may be formed differently to have different properties, such as diffusive properties. As a result, the same material used in separate references may have different properties. Because the '917 reference does not discuss the diffusive properties of the material used for the spacers, generally or with respect to another material, it has not been shown that the material disclosed therein can have oxygen diffusion on an order of magnitude different than oxide spacers.

Because the reference does not teach these aspects, no reasonable interpretation of the asserted prior art can provide correspondence. As such, the rejections fail.

Applicant traverses the § 103(a) rejections because the Office Action fails to present a *prima facie* case of obviousness. In presenting a *prima facie* case of obviousness, the Examiner must consider "both the invention and the prior art references as a whole." M.P.E.P. § 2141.02. Further, the Examiner is reminded that "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418-419 (U.S. 2007). The rejections presented in the Office Action appear to attempt to combine the spacers of the secondary '917 reference with the gate stack of the flash EEPROM device of the primary '204 reference without regards to overall teachings of either the primary '204 reference or the secondary '917 reference. The present rejection amounts to the assertion that simply finding a spacer made of the same material as described in the instant disclosure. Allowing such a rejection to stand strips the rejection of any necessary motivation to combine and results in a rejection based on finding the various limitations scattered throughout various references regardless of the actual teachings of the cited references. This is contrary to the M.P.E.P. and relevant case law, including *KSR*.

The Office Action has also failed to establish motivation to combine the dry etch of the Quirk reference with the '204 reference, as consistent with Applicant's traversals of record, contrary to the requirements of the M.P.E.P. and applicable law (*see, e.g.*, the

*KSR* reference as cited above). In this instance, the alleged motivation to combine the Quirk reference with the '204 reference is to provide "high selectivity and low device damage" but is silent as to how these features would be applicable to the conventional gate structure of the '204 reference or how the '204 reference could function as such. For example, while the Office Action provides no discussion as to how the dry etch in the Quirk reference would be combined with the '204 reference as modified with the '917 reference, it appears such a dry etch would be inapplicable as there are no underlying dielectric regions due to the inverted nature of the structure.

Applicant has amended the abstract to remove reference identification to the figures.

In view of the above, the rejections are improper and Applicant requests that they be withdrawn. Applicant believes that each of the rejections has been overcome and the application is in condition for allowance. Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is asked to contact the agent overseeing the application file, Peter Zawilski, of NXP Corporation at (408) 474-9063.

*Please direct all correspondence to:*

Intellectual Property and Licensing  
NXP Semiconductors  
1109 McKay Drive MS41  
San Jose, CA 95131

CUSTOMER NO. 65913

By: 

Robert J. Crawford  
Reg. No.: 32,122  
(NXPS.442PA)